

HOMEOSTASIS

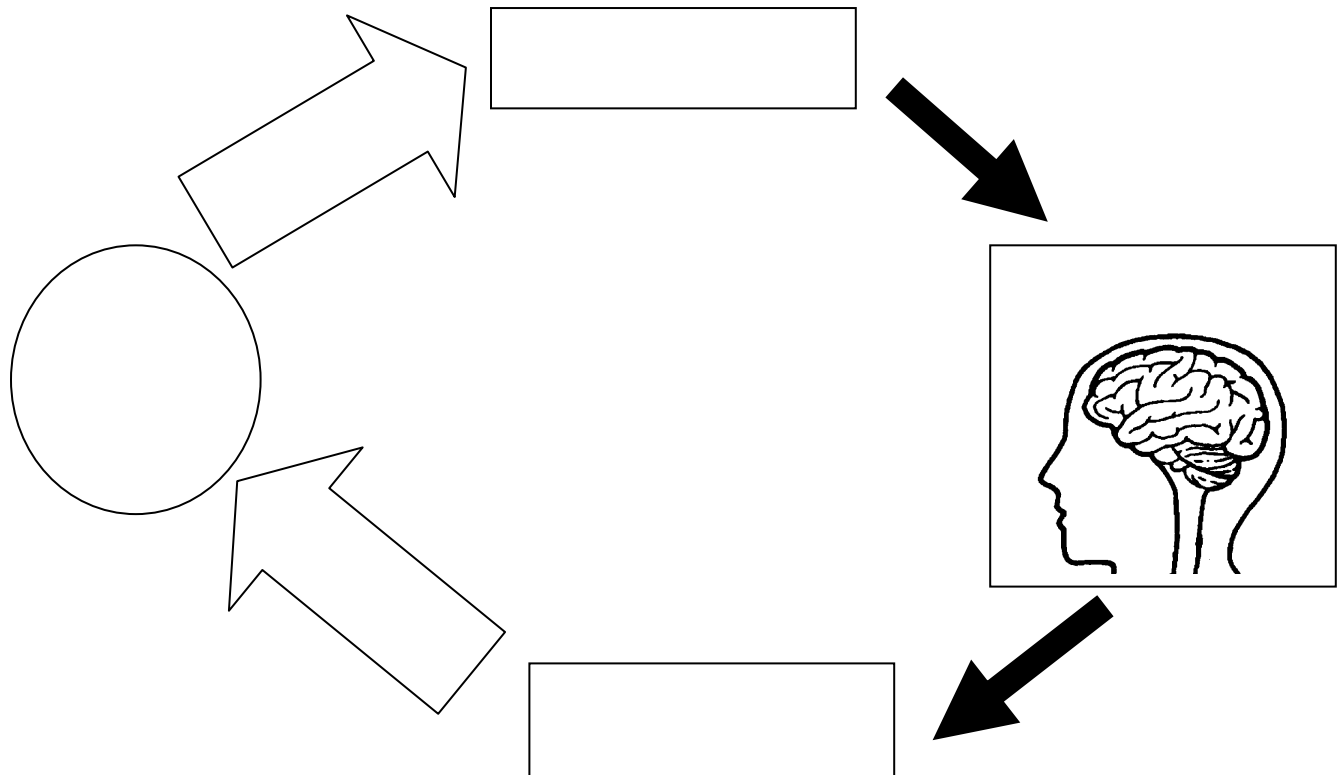
OBJECTIVES:

4. Explain the significance of homeostasis. (p. 14)
5. Describe how positive and negative feedback are involved in homeostatic regulation. (pp. 14 – 15)

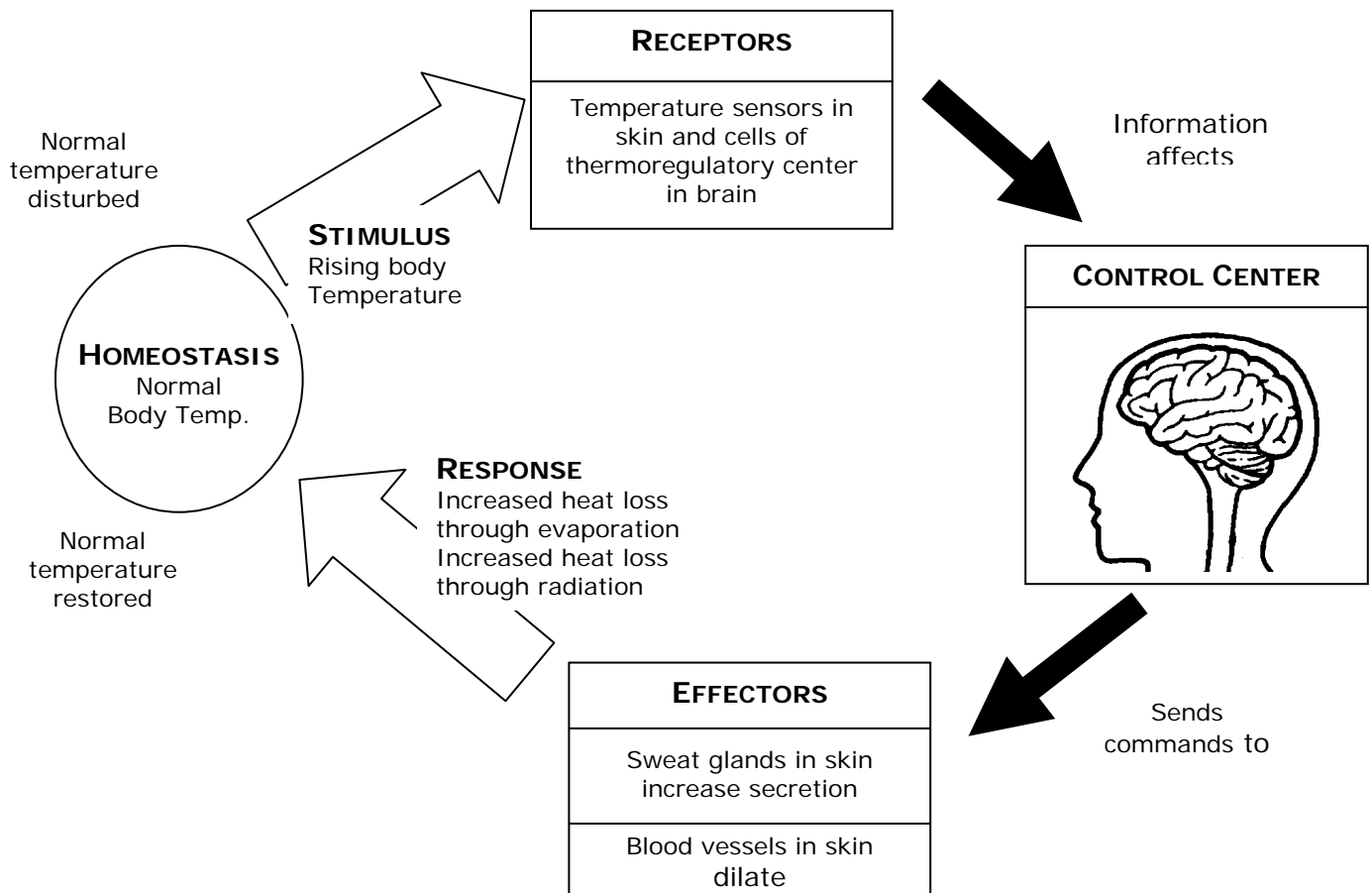
HOMEOSTASIS:

DEFINITION	IMPORTANCE

MECHANISMS FOR MAINTAINING HOMEOSTASIS:



NEGATIVE FEEDBACK: AN EXAMPLE (BODY TEMPERATURE)



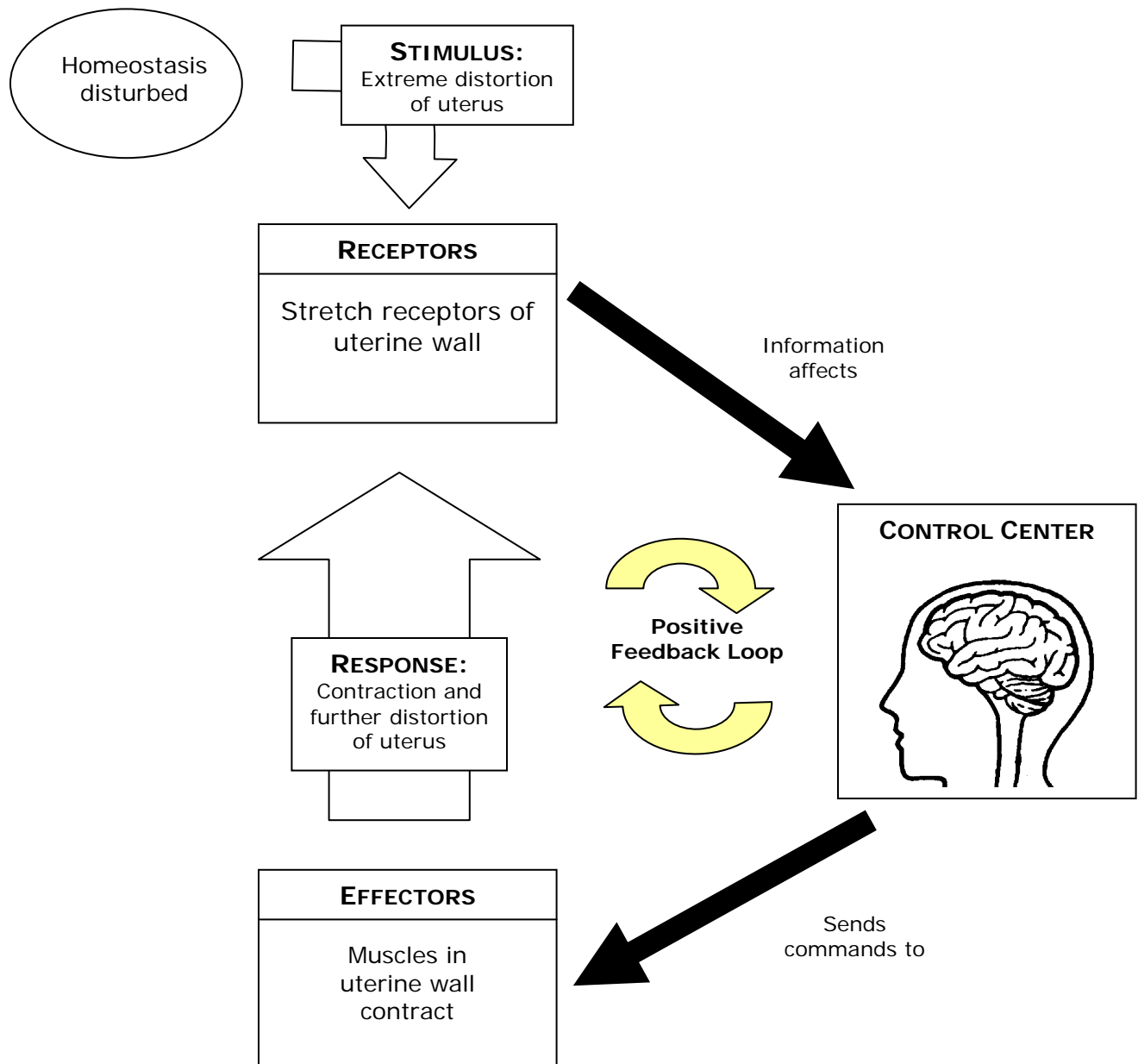
QUESTIONS

1. How does the response by the effectors compare to the original stimulus?

2. Is homeostasis restored in this example? _____

How do you know? _____

POSITIVE FEEDBACK: AN EXAMPLE (LABOR CONTRACTIONS)



QUESTIONS

3. How does the response by the effectors compare to the original stimulus?

4. Is homeostasis restored in this example? _____
How do you know? _____

5. Why is maintaining homeostasis important to human beings?

6. What happens to the body when homeostasis breaks down?

7. In general, what effect does negative feedback have on homeostasis?

In general, what effect does positive feedback have on homeostasis?

8. When blood glucose levels rise above a set point after eating a meal high in carbohydrates, β -cells in the pancreas are activated and release insulin into the blood. Insulin causes an increase in glucose uptake by body cells and causes the liver to take in glucose and convert it to glycogen. As a result, blood glucose levels decline to the set point.
- a. Is this an example of positive or negative feedback? _____
- b. How do you know? _____

- c. How is the maintenance of homeostasis affected?

9. Why is positive feedback helpful in clotting blood but unsuitable for regulation of body temperature?

10. What is the role of each of the following components in the homeostatic mechanism?

COMPONENT	ROLE
Receptor	
Control Center	
Effector	

11. Identify each of the following an example of **Positive** or **Negative** feedback.

- _____ Response is opposite of or counters the stimulus
- _____ Response amplifies or reinforces the stimulus
- _____ Continues to disrupt homeostasis
- _____ Restores homeostasis
- _____ When blood pH levels fall below a set point, the kidneys collect and remove more H⁺ (hydrogen ions) from the blood, thus bring the blood pH levels back to normal
- _____ The female hormone estrogen triggers the release of the luteinizing hormone (LH); increased production of LH increases the production and release of estrogen
- _____ The anterior pituitary gland produces a hormone called FSH (follicle stimulating hormone); FSH causes the ovaries to produce and release estrogen; increased production of estrogen causes a decrease in production of FSH
- _____ When blood calcium levels rise above a set point (hypercalcemia) specialized cells in the thyroid secrete a hormone called calcitonin. Calcitonin causes specialized cells in bone tissue to take calcium out of the blood and store it in bone tissue.